

What is claimed is:

1. An apparatus for controlling a base transceiver station  
in an international mobile telecommunication system having a  
5 plurality of the base transceiver station (BTS), at least a base  
station controller (BSC), a base station management (BSM) and a  
mobile switching center (MSC), the apparatus comprising:

a local routing means for interfacing the BTS with the MSC,  
for processing a call and a No. 7 signal and for providing alarms  
10 occurred in the BSC to the BSM;

a vocoding means for vocoding voice data received through the  
local routing means;

a global routing means for interfacing among the local router,  
other local routers and the BSM; and

15 a clock generating means for clocks necessary for controlling  
the BTS and the BSM based on time and frequency clocks received  
from a global positioning system (GPS).

2. The apparatus as recited in claim 1, wherein the local  
20 routing means includes:

an OAM controlling means for generating a switching control  
signal, a multiplexing/demultiplexing control signal, an ATM  
(Asynchronous Transfer Mode) switch and protocol control signal  
and an ATM input/output control signal, thereby controlling a  
25 routing of ATM packet data;

a switching means for interfacing the ATM packet data from  
the BTS in response to the ATM switching/protocol control signal;

multiplexing/demultiplexing means for multiplexing ATM packet data received through the switching means based on the multiplexing/demultiplexing control signal, and for demultiplexing ATM packet data to be transmitted to the switching means;

5 an ATM switch and protocol control means for transmitting subscriber data from/to the multiplexing/demultiplexing means to/from the MSC, processing calls and No. 7 signals and collecting the alarms in the BSC;

an ATM input/output interface means for transmitting the  
10 alarm from the ATM switch and protocol controlling means to the BSC and transmitting the subscriber data to the vocoding means, in response to the ATM switch and protocol control signal.

3. The apparatus as recited in claim 2, wherein the  
15 multiplexing/demultiplexing means includes:

multiplexing/demultiplexing means for multiplexing the ATM packet data, thereby generating AAL2 signal, and for demultiplexing AAL signal;

signal converting means for converting the AAL2 signals to  
20 AAL2' signal; and

an ATM signal adapt handling means for generating ATM cells based on AAL2' signals from the signal converting means.

4. The apparatus as recited in claim 2, further including  
25 a controlling means for controlling a signal conversion of the signal converting means and ATM cell arrangement of the ATM signal adapt handling means.

5. The apparatus as recited in claim 3, wherein the multiplexing/demultiplexing means includes:

eight line interfaces each for multiplexing four channel signals received from the switching means, and for demultiplexing an input signal, thereby outputting four channel signals;

a first multiplexer/demultiplexer for multiplexing the signals from a first and a second line interfaces and generating an AAL2 signal, and for demultiplexing the AAL2 signal, thereby generating two line signals;

a second multiplexer/demultiplexer for multiplexing the signals from a third and a fourth line interfaces and generating AAL2 signal, and for demultiplexing the AAL2 signal, thereby generating two line signals;

a third multiplexer/demultiplexer for multiplexing the signals from a fifth and a sixth line interfaces and generating AAL2 signal, and for demultiplexing the AAL2 signal, thereby generating two line signals; and

a fourth multiplexer/demultiplexer for multiplexing the signals from a seventh and a eighth line interfaces and generating AAL2 signal, and for demultiplexing the AAL2 signal, thereby generating two line signals.

6. The apparatus as recited in claim 5, wherein the line interface is 4:1 multiplexer/demultiplexer.

7. The apparatus as recited in claim 5, wherein the multiplexer/demultiplexer is 4:1 multiplexer/demultiplexer.

8. The apparatus as recited in claim 2, wherein the ATM switch and protocol control means includes:

ATM subscriber access handler for transmitting AAL2' signals;

5 ATM switch for switching the subscriber data in response to the ATM switch and protocol control signal from the OAM control processor;

call processor for processing calls and No.7 signals; and

10 alarm control processor for collecting alarms occurred in the BSC and transmitting the alarms to the ATM switch.

9. The apparatus as recited in claim 2, wherein the ATM input/output interface means includes:

15 a first ATM interface for transmitting the alarm collected by OC-3 interface to the global router;

a second ATM interface, which is a reserved interface, for being used instead of the first ATM interface at a fail of the first ATM interface and for interfacing with another board and;

20 a third ATM interface for interfacing the data with the vocoding means; and

a fourth ATM interface, which is a reserved interface, for being used instead of the third ATM interface when a capacity of the third ATM interface is insufficient.

25 10. The apparatus as recited in claim 1, wherein the vocoding means includes:

an enhanced vocoder interface assembly connected to the local

router and the MSC, for interfacing the ATM cells; and

an enhanced vocoder operation assemblies connected to the enhanced vocoder interface assembly, for vocoding voice data and for performing a power control and a handoff.

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11. The apparatus as recited in claim 10, wherein the enhanced vocoder interface assembly includes:

an ATM cell interface for interfacing the ATM cells through the local router and the T3 interface;

10 a cell bus controller for loading the ATM cell onto the cell bus;

a timing controller for generating a timing signal to be used for the ATM cell interface and E1 signal interface;

15 an E1 transceiver for transmitting/receiving the E1 signal to/from the MSC based on the E1 signal interface timing signal.

12. The apparatus as recited in claim 10, wherein the cell bus controller includes:

20 a bus arbiter for performing a timing control and a bus arbitration;

a cubit device connected to the bus arbiter in parallel, for interfacing the ATM cells and exchanging the control signal.

25 13. The apparatus as recited in claim 10, wherein the enhanced vocoder operation assembly includes:

a cell bus controller for receiving the ATM cell transmitted through the cell bus and for transmitting the ATM cell through the

cell bus;

a selector for selecting a vocoder to be used; and  
digital signal processor for vocoding the voice data.

5. 14. The apparatus as recited in claim 13, wherein the digital  
signal processor processes ten (10) channel signals.

- 10 15. The apparatus as recited in claim 1, wherein the global  
routing means performs an OC-3 interface with the local routing  
means, an OC-3 ATM interface with a local routing means in another  
base station controller, E1 or E3 interface with a base station  
management (BSM) and the OC-3 ATM interface with a packet switched  
data network.